THE THESIS COMMITTEE FOR JULIA KATHERINE GARDNER
CERTIFIES THAT THIS IS THE APPROVED VERSION OF THE FOLLOWING THESIS:

MOTIVATIONAL CORRELATES OF EXERCISE IN COLLEGE WOMEN

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor:

Carole Holahan

Esbelle Jowers

MOTIVATIONAL CORRELATES OF EXERCISE IN COLLEGE WOMEN

BY

JULIA KATHERINE GARDNER, BA

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ABSTRACT

MOTIVATIONAL CORRELATES OF EXERCISE IN COLLEGE WOMEN

Julia Katherine Gardner, MSHealthEd

The University of Texas at Austin, 2012

Supervisor: Carole Holahan

Possible selves represent how people think about their potential and about their future states (Markus & Nurius, 1986). To explore the cognitive processes involved in the decision to exercise, the possible selves (hoped-for and feared) of 93 undergraduate women at the University of Texas at Austin were examined, as were two self-efficacy constructs – scheduling and barrier self-efficacy. Most important hoped-for and feared possible selves related to exercise were categorized and analyzed. Physical and Health categories, followed by Personal and Spiritual, Occupation and Education, and Body Image were most commonly listed for hoped-for selves, while categories of Body Image, Health, and Personal and Spiritual, were most commonly cited for most important feared possible selves. Participants rated the importance, self-efficacy and outcome expectancy of their most important hoped-for and feared selves highly. Participants also felt highly efficacious in overcoming scheduling and barrier obstacles with regard to exercise. Comparisons were made across exercise levels, differentiating between those meeting or

not meeting the recommended level of physical activity (Godin, 2011). Multiple logistic regression analyses, controlling for age, were used to test for significant relationships between motivational variables and exercise. Steps taken to achieve the most important possible self (odds ratio [*OR*] = 1.88, 95% *CI* = 1.21 – 2.92), steps taken to avoid the most important feared self (*OR* = 1.58, 95% *CI* = 1.04 – 2.40), scheduling self-efficacy (*OR* = 1.58, 95% *CI* = 1.18 – 2.10), and barrier self-efficacy (*OR* = 1.58, 95% *CI* = 1.04 – 2.40) were related to meeting the recommended level of physical activity, compared to not meeting the recommended level. These cross-sectional results suggest that the incorporation of college women's possible selves and other motivational factors into interventions to increase women's physical activity may be a promising area for future research.

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CHAPTER 1: INTRODUCTION

People conceptualize, construct and evaluate themselves in a myriad of different ways and differently at varying points in life, shifting and changing ideas about themselves throughout the life-span. These self-perceptions are thought to have direct implications for a wide range of behavioral motivations and outcomes in life (Hooker & Kaus, 1994; Cross & Markus, 1994; Ouellette, Hessling, Gibbons, Reis-Bergan & Gerrard, 2005; Murru & Ginis, 2010). Exactly how these present and future images of the self impact behavior is an area of growing interest, particularly regarding their influence on motivations toward exercise behaviors. With the expanding waistlines of the American population alongside continual increases in healthcare due to the associated negative results of inactivity and overconsumption, understanding the motivational factors behind exercise is of increasing importance.

Current United States statistics indicate that 33.8% of all adults are obese ("How Much Physical," 2011). Health experts largely attribute the rise in obesity over the past several decades to significant decreases in regular physical activity. Only 25% of U.S. adults report engaging in the recommended levels of physical activity each week. These standards are outlined by the Center for Disease Control and are currently set at 150 minutes of moderate intensity aerobic activity or, 75 minutes of vigorous intensity aerobic activity, per week. An additional 25% of U.S. adults report being entirely sedentary ("Recommendations to Increase," 2002, pp. 67-72; “How Much Physical,”

2011). The consequences of sedentary or largely physically inactive lifestyles are quite severe, with physical inactivity serving as an independent predictor of all-cause death (Murru & Ginis, 2010). Conversely, regular physical activity has numerous known physical and mental benefits including decreased risk of developing cardiovascular disease, type 2 diabetes, ischemic stroke, certain types of cancers, osteoporosis, and depression ("Recommendations to Increase," 2002, pp. 67-72).

Individuals are unique in motivations toward exercise. However, certain motivational trends can be found, particularly with respect to age and gender. American culture, and that of the general Western society, is one driven by beauty, a beauty dictated by the prerequisite of thinness (McLaren, Hardy & Kuh, 2003). Within the Western world, beauty also tends to impart value and status to women, whereas for men value and status is often attributed to power and prestige. Women, therefore, may be judged more on their appearance than by any other attribute (Ferraro, Muehlenkamp, Paintner, Wasson, Hager, & Hoverson, 2008), supporting the notion that women may be much more and differentially susceptible to the development of extrinsic motivations for exercise than men. This may be especially true during early adulthood, a time social norms stipulate that individuals will find and marry their mate, placing pressure upon women, in particular, to be attractive for potential suitors.

For many, college is a time in which life goals are conceptualized and when identity formation becomes more concrete. Through possible self exploration, individuals set goals and create means by which to achieve or avoid these possible selves (Kerpelman & Pittman, 2001). Research indicates that development of possible selves emerges during

adolescence, with development strongly linked with increased volitional power and personal agency (Aloise-Young, Hennigan, & Leong, 2001). It can therefore be anticipated that as personal decision-making power and responsibility increases into the college years and early adulthood, greater possible self development will likewise occur. With future possible selves including such realms as occupation, family, disease state, and overall well-being, of specific interest is how current female undergraduate students act in anticipation of these future roles and, specifically what role present physical activity and exercise plays in goal attainment. Of interest is whether exercise is therefore seen as essential to college-aged women.

Both men and women report declines in physical activity levels across the lifespan; however, rates of decline in women's physical activity far outpace those of men (Segar, Jayaratne, Hanion & Richardson, 2002). The decline in physical activity between high school years and college – or the transition from late adolescence to early adulthood – is especially pronounced. While 70.7% of current college students met the criteria for vigorous physical activity (VPA) in high school (engaging in moderate-intensity activity for at least 30 minutes on at least 5 days each week or vigorous physical activity for 20 minutes or more on at least 3 days of the week), only 47.6% of these same students currently meet this same criteria. Furthermore, increases in inactivity rose from 13.2% in high school to 23.2% in college (Nelson, Gortmaker, Subramanian & Wechsler, 2007). Due to the particularly sharp declines in physical activity levels between high school and college, and with women's greater proclivity towards inactivity than men (as approximately 75% of women in the United States either inactive or underactive), the

undergraduate years present a unique opportunity to positively impact women's physical activity levels (Marcus & Forsyth, 1998; Nelson, et al., 2007).

A lack of research currently exists pertaining to exercise motivations and future possible selves, specifically related to undergraduate women. While research regarding exercise possible selves for middle-aged and older women exists, as well as studies regarding the exercise motivations for college males (or a mixture of the male/female college population), those specifically analyzing female undergraduates remains sparse. College females have unique needs, circumstances, and motivations, particularly in the area of health and exercise, and understanding these unique features may help generate more effective exercise interventions for this population.

Self-efficacy, or an individuals' confidence in his/her ability to successfully engage in behaviors that will yield a desired outcome (Bandura, 1986), plays a key role in exercise behavior. Individuals with high levels of exercise self-efficacy are more likely to adhere to exercise programs and maintain exercise behaviors (Hooker & Kaus, 1994; Rodger & Sullivan, 2001; Whaley, 2003; Sullivan & Rothman, 2008). Two important components of exercise self-efficacy are the ability to plan for and deal with barriers to exercise. The ability to plan (or schedule) exercise and overcome the numerous barriers to exercise is an important issue for those with multiple time and energy demands, such as college students. Increasing efficacy in both the areas of scheduling and barrier will likely increase overall exercise self-efficacy, subsequently resulting in greater exercise adherence.

The purpose of this study is to explore exercise-related possible selves in college women, and the relation of possible self-related motivational factors and efficacy measures to exercise behavior. Specifically, the study seeks to address the following research questions:

1. Determine the exercise-related possible selves of college women, including strategies for attainment or avoidance, their importance, capabilities for attainment or avoidance, and outcome expectancies.
2. Determine the association between attempts to attain or avoid possible selves, related exercise self-regulatory factors, exercise planning, barrier self-efficacy, and exercise behavior.

CHAPTER 2: LITERATURE REVIEW

Exercise Through the Lifespan

Research shows that participation rates in regular physical activity significantly diminish across the lifespan (Segar, Jayaratne, Hanion & Richardson, 2002), a trend that is particularly steady during young adulthood. This reduction in physical activity is especially prevalent between high school and college years, with the highest rate of physical activity declines, suggested by the US Department of Health and Human Services, as between the years of 18 and 24 (Grubbs & Carter, 2002). In fact, approximately 24% of college students do not engage in any form of moderate physical activity each week, and only 56.7% engage in 1 to 4 days of moderate activity (Egli, Bland, Melton, & Czech, 2011). This pattern of inactivity during college increases the chances of weight gain and its associated health problems, with the largest increase in overweight and obesity occurring between the ages of 18 and 29 (Racette, Deusinger, Strube, Highstein, & Deusinger, 2008). Of significant importance is the indication that weight gained during this critical time can increase the chances of future obesity (Egli, et al., 2011). In a study following the weight and health behaviors of college students, a significant (though modest) increase in body weight and BMI was found during the course of students' college careers. This study also observed that nearly one-third of these students, from freshman to senior year, did not meet the recommended exercise guidelines (Racette, et al., 2008).

College, for many young adults, is a time of tremendous change and is a period when many life transitions occur. With this transitional period often comes greater ability to personally make major decisions and to set more established patterns for one's future life, including physical activity participation. Projections for Fall 2012 indicate that a record 19.9 million students are expected to enroll and attend a U.S. college or university. This provides campuses with a unique opportunity to influence behavioral patterns for a significant proportion of the population, including patterns of physical activity (*Projections of Education*, 2011). Research indicates that physical activity patterns established during college, particularly those set during the senior year, have a significant impact on physical activity patterns in later life (Keating, Guan, Pinero, & Bidges, 2005). One retrospective study found that 84.7% of college seniors who regularly exercised were still physically active at a 5 or 10-year follow-up (Keating, et al., 2005). Unfortunately, the same trend emerged among inactive college seniors, with 81.3% of all physically inactive college seniors found also inactive at 5 or 10-year follow-up (Keating, et al., 2005). A 1986 landmark study following 16,936 college alumni conducted by Paffenbarger, Hyde and Hsieh (1986) found that those participants in late life (70-84 years) who maintained physical activity patterns set during their college years showed decreased rates of mortality of up to 49%. Another study, which followed both men and women, found that participation in competitive sports in early life (10-19 years) significantly predicted physical activity in later life (65-84 years) (Hirvensalo, Lintunen, & Rantanen, 2000). Thus, time after time research has consistently shown that one of the top predictors of current behavior is past behavior and that an association can be found

between physical activity patterns established during college life and physical activity levels in the years post-graduation.

As noted above, college and the first years after graduation are times of increased assimilation into the adult working world and family roles (Caspersen, Pereira, & Curran, 2000). As time between college life and graduation increases, relative stability in life may begin to occur, as working patterns, household and family responsibilities and outside commitments only vary modestly (Caspersen et al., 2000) making exercise potentially more feasible. Therefore, targeting interventions to increase commitment to regular physical activity during college life when assimilation into numerous new roles occurs (and seen as a more unstable time), may result in continuing engagement in exercise well into adult life.

While college is a time of major life transition for young students, it is also a time in which campuses have unique opportunities to positively shape healthy exercise behaviors. Many developmentalists believe that the most effective points to intervene and promote healthy behaviors is during periods of transition, making the college years an ideal time to influence exercise behavior (Evenson, Wilcox, Pettinger, Brunner, King & McTiernan, 2002).

Gender and Exercise:

Exercise is consistently beneficial to all, regardless of age, ethnicity, and gender. Physical benefits, such as decreased susceptibility to certain cancers, heart disease, and type 2 diabetes, as well as psychological benefits, such as increased mood state and

decreased depression rates, are found for those who exercise regularly ("Recommendations to Increase," 2002, pp. 67-72). While both men and women report decreasing physical activity patterns across the lifespan, the picture is especially bleak for women, as rates of physical inactivity outpace those of their male counterparts (Segar, et al, 2002). While there are substantial decreases in overall levels of physical activity in men as they age, men continue to report more regular, sustained physical activity than women (Caspersen, et al., 2000). One study following the exercise behaviors of undergraduate students found that only 63% of female study subjects met established criteria to be categorized as exercisers, while 92% of male subjects met the same criteria (Grubbs & Carter, 2002).

Women are particularly likely to describe barriers to physical activity and report less control of physical activity decisions than men (Segar, et al, 2002). However, women experience a unique set of benefits to regular physical activity in addition to those discussed above including, a reduction in premenstrual syndrome and dysmenorrhea, a reduction in the risk of developing gestational diabetes, and diminished pregnancy-related pelvic and back pain and facilitated labor and postnatal recovery (Marcus & Forsyth, 1998). Yet, psychosocial constraints – perceived or actual - such as gender roles and female socialization, decrease women's physical activity patterns over the life-span and prevent women from experiencing exercises benefits. Traditional gender roles that position women as primary caregivers encourage women to sideline their own needs (physical, social and otherwise) for those of others (Segar, et al, 2002).

Of the 19.9 million students projected to attend college during Fall 2012, 11.3 million are anticipated to be women (*Projections of Education*, 2011). Due, in part, to women's greater propensity for inactivity across the lifespan, as well as the substantial presence of women on college and university campuses, women represent an important population group to target for physical activity intervention, but have typically been studied less than men.

It is important to tailor exercise intervention by gender, as differing cultural expectations and norms exist for men and women. Differing social comparisons therefore exist for the genders that influence why, how, and what specific exercises are performed. As social roles and expectations change throughout the lifespan, addressing the specific life contexts for women at their particular stage of life to address exercise behavioral change is of great importance and warrants additional research.

Possible Selves

Possible selves, a construct developed by Markus and Nurius in the late 1980's, is one way to understand the link between goals, motivations and cognitions relating to exercise (Markus & Nurius, 1986). Possible selves are defined as personalized representations of oneself in the future, including individual hopes, fears and expectations of the future (Aloise-Young, Hennigan, & Leong, 2001; Cross & Markus, 1991). Personal goals and aspirations, family background and medical history – these and other desires, anxieties, and perceptions of oneself all combine to create various possible selves

and influence significant behavioral patterns intended to approach or avoid these possible selves (Cross & Markus, 1991).

Individuals hold myriad possible selves regarding potential roles and life identities. Hoped-for selves include the aspirations, hopes and wishes that a person desires to embody and are actively sought to move toward, while feared selves include those sets of qualities that a person is concerned about possibly becoming and wishes to avoid (Carver, Lawrence, & Scheier, 1999).

Research indicates that development of possible selves emerges during adolescence, with development strongly linked with increased volitional power and personal agency (Aloise-Young, et al., 2001). It can therefore be anticipated that as personal decision-making power and responsibility increases in college and early adulthood, greater possible self development will likewise occur. Research on possible selves indicates that a sizeable portion of an individual's behavior can be viewed as an effort to approach or avoid various possible selves (Markus & Nurius, 1986). As a means to negotiate the various changes and transitions that occur in the period from adolescence to adulthood, possible selves are utilized as psychological resources to motivate and defend the developing young adult (Cross & Markus, 1991).

Not all possible selves are equally conceptualized, however, with variations in vividness, some being richly detailed, and others being only vaguely imagined (Murru & Ginis, 2010). Possible selves are seen as motivators for personal growth and change over the lifespan and blueprints for action (Cross & Markus, 1991). Thus, the more richly detailed and linked with strategies for achievement these possible selves are, the greater

the likelihood of successful self-regulation and ability to avoid feared selves and/or attain desired selves. Additionally, the importance placed on each possible self relates to the amount of time, energy, and regulatory function given toward that behavior (Harju & Reed, 2003). Increased perceptions of one's ability (self-efficacy) in an area, whether it be attaining a hoped-for self or avoiding a feared self, has been shown to increase the intrinsic value or importance of that area and thereby increase outcome success (Cross & Markus, 1994). Assessing personal states in the here-and-now thus serves as an important factor in successfully reaching desired possible selves or avoiding feared selves. Analyzing and reflecting on current states in association with future possible selves provides the structure and steps by which these future selves may be attained or avoided (Harju & Reed, 2003). Possible selves, in this way, serve as behavioral standards and 'points of comparison' between current experiences, feelings, and behaviors and those that are desirable or undesirable (Hoyle & Sherrill, 2006). Possible selves therefore are a means by which life events and current behaviors are evaluated and interpreted, depending on ones' vision of the future – adjusting behaviors according to the possible selves conceptualized. The development and envisioning of a possible self thus builds a bridge between the current state and the desired (or perhaps undesired) outcome, with the more vivid and complete the possible self created, the better the ability to reach the outcome.

Support for the influence of possible selves in various health-related behaviors has been shown by several studies in recent years. One such study, conducted by Aloise-Young, Hennigan, and Leong (2001), investigated the role of possible selves in

association with smoking behavior and alcohol consumption in early adolescents. Results from this study indicate that certain aspects of the possible selves, particularly positive expected selves, correlated with negative health behaviors. Specifically, increased levels of negative health behaviors (i.e. more adolescent smoking and drinking behaviors) appeared in those who lacked positive expected selves (Aloise-Young, et al., 2001). Thus, lacking positive expected selves or having an abundance of negative expected selves may leave individuals more vulnerable to succumbing to harmful health-related behaviors. Conversely, Cross and Markus (1994) found that for American college-aged populations a lack of positive possible selves may not always be the issue. Rather, they found that some students are prone to unrealistically optimistic views of themselves and the future, believing that almost anything is possible (Cross & Markus, 1994).

While an abundance of literature exists regarding the role of possible selves on overall motivation, academic achievement, occupation success, and a myriad of other behaviors, a current research gap exists regarding the role of possible selves in physical activity/exercise behaviors, particularly in college-aged female populations. Only a few studies have examined the role of exercise-related possible selves in actual exercise behavior. One such study, conducted by Whaley (2003) looked at the influence of future possible selves on the exercise behaviors of middle-aged women. In this study, she hypothesized that active and inactive individuals would hold differing conceptions of themselves in the future relating to exercise and place differing degrees of importance on these selves. Whaley's hypothesizes were confirmed that the types of both hoped-for and feared exercise-related possible selves differed between exercisers and non-exercisers

(Whaley, 2003). Specifically, exercise-related possible selves related to body image (including weight and attractiveness) appeared significantly more frequently in non-exercisers than exercisers; whereas long-term exercisers tended to report more health related hoped-for and feared possible selves (Whaley, 2003). Those classified as non-exercisers and occasional exercisers were also found to have lesser beliefs than long-term exercisers in their self-efficacy to achieve both their exercise-specific possible selves and their most important possible selves, and also attributed less importance to these possible selves. Thus, Whaley found that among her middle-aged female population, self-regulatory variables, such as high importance, self-efficacy, and outcome expectancy, were strongly associated with exercise behavior. Furthermore, she found that the more importance placed upon the possible self, the greater the ability to sustain exercise behavior. By translating Whaley's study to college-aged females, we will be able to see whether the same patterns in types of possible selves generated and their relative importance are the same in college-aged women, or whether these variables change across the lifespan.

Research studying health-related possible selves, in general, (and not strictly physical activity/exercise behaviors) has shown that holding health-related possible selves is a stronger predictor of health behavior than simply holding global health values (Hooker & Kaus, 1994). Literature also indicates that activation of feared health-related possible selves may lead to greater self-regulation of health behavior than the activation of hoped-for selves (Hoyle & Sherrill, 2006). However, when looking specifically at exercise-related possible selves, in contrast to other health behaviors, the same pattern is

not found. A study conducted by Ouellette, Hessling, Gibbons, Reis-Bergan, & Gerrard (2005) found that both hoped-for and feared-possible selves were equally vivid and influential in impacting exercise behavior in an undergraduate population. Their findings also suggested that for this population, creating images of future possible selves is not only indicative of willingness for behaviors, but that contemplation of these images can produce behavioral change (Ouellette, et al., 2005). However, the study only found significant increases in exercise behavior among those with a tendency to socially compare, not surprising given the large tendency for college students' preoccupation with their social image.

Building upon Ouellette and colleagues (2005) research, Murru and Ginis (2010) looked at the effects of possible self generation and exercise behavior in individuals aged 18-33. The researchers also concluded that both hoped-for and feared possible selves have greater influence on specifically exercise behavior, than on general health behaviors. However, their research further indicates that holding a "balanced" possible self (imagining both a feared and hoped-for exercise-related possible self) can have a greater impact on exercise behavior than either hoped-for or feared selves (Murru & Ginis, 2010).

Exercise and exercise behaviors may hold different meanings at different points in the lifespan, so a careful look at the ability of future possible selves to regulate current exercise behaviors in college students is important, as it will necessarily be differentiated from that of younger or older segments of the population. As previously indicated, social image often plays a role in the exercise behaviors of college students. Common positive

exercise-related possible selves often cited by college students include being fit, being healthy, and being attractive; with commonly listed feared non-exerciser selves including being unfit, failing to attain exercise goals and being unattractive (Murru & Ginis, 2010).

As previously stated, there is currently a gap in the literature concerning the specific role of possible selves in exercise interventions. Additional studies looking at the potentially unique role of possible selves in increasing exercise behavior are therefore necessary to provide more conclusive evidence for the impact of both feared and hoped-for possible selves. Further analysis of the role of the "balanced" possible self, as alluded to by Murru and Ginis (2010), also warrants future research.

Goal Creation & Motivations

Possible selves, in and of themselves, are not enough to elicit behavioral action or change. Rather, strategies and plans must be in place to shift the possible self from simply a thought to an action step. Goals can play an important role in the pursuit or avoidance of future possible selves. The hoped-for self of "marathon runner" or the feared-self of "diabetic" each can be conceptualized as goals to pursue or avoid. Thus, goals can serve as motivational units that provide direction and coherence to a person's life, and can be the stepping stones toward avoidance or achievement of possible selves. Personal goals are often organized around personal beliefs regarding oneself and personal relationships, identities, tasks and concerns that provide meaning to life (Gollwitzer & Oettingen, p. 23). In both adult and youth populations, having a sense of purpose results

in psychologically healthier individuals with greater life satisfaction. Those feeling confident in the will to progress towards their ultimate aim are found to have greater life satisfaction (Bronk, Hill, Lapsley, Talib, & Finch, 2009). Greater psychological health of those having a sense of purpose, or holding goals, likewise may result in greater physical health (Maltby & Day, 2001; Sheldon & Elliot, 1999).

For the purpose of this study, goals therefore may provide a motivational force towards exercise/physical activity adherence to either avoid feared possible selves or achieve hoped-for selves. Goals may help to structure and organize one's life experience, providing coherence and continuity to both daily pursuits and more long-term possible selves (Gollwitzer & Oettingen, p. 27), even in the midst of transitional periods. Furthermore, the more concrete the goal (and, for our purposes, the more concrete the possible self), the easier it is to monitor one's progress, which in turn may further incite motivation towards the goal (Gollwitzer & Oettingen, p. 31).

Behavior goals, such as those tied to physical activity, are closely tied to cultural expectations. Particularly for women in western societies, physical activity goals are likely to be heavily influenced by the internalization of gendered pressures and cultural norms (Segar, Eccles, Peck & Richardson, 2007), as Westernized societies sexually objectify the female body (Strelan, Mehaffey, & Tiggemann, 2003). Young women, in particular, are thought more impressionable to the whims of cultural views and expectations, therefore exhibiting feelings of greater physical judgment. This self-objectification impacts physical activity rates and motivations, being shown among college-aged women to be positively associated with appearance motives for exercise

(Strelan, et al., 2003). With the target population of this study being college women, these cultural expectations are anticipated to play a large role in the motivations for exercise behavior.

College is also a time when men and women begin to search for a lifetime mate in more earnest than previously. Surrounded by men and women of similar ages and positions in life, college provides a unique opportunity to find that "special someone". Because of this desire to find a mate, weight and appearance goals are often more salient reasons for physical activity, and the creation of physical activity possible selves and goals, than in other periods of life, particularly for women (Segar, et al., 2007). Women may create exercise goals related to weight, and fail to continue to exercise if these goals are not met within a determined timeframe. A study conducted by Sears and Stanton (2001), found that women who dropped out of a 12-week exercise program tended to have more expectancy violations, particularly for weight, than those women who completed the program.

According to self-determination theory, introjected regulation occurs when individuals take prompts from their environment (or culture) regarding their behavior and partially internalize them. This is characterized by the individual feeling that they *should* do something, rather than out of pure enjoyment or personal fulfillment/gain (Strelan, et al., 2003). This form of regulation is associated with decreased positive affect, lower intrinsic motivation and worse adherence, as behaviors are performed to avoid social disapproval and to gain social approval or self-worth (Deci & Ryan, 1985; Strelan et al., 2003). In contrast, behaviors performed out of a person's autonomous decision and a true

sense of personal importance are linked to better behavioral participation. Thus, intrinsically motivating behaviors, rather than extrinsically motivating behaviors are far more successful in long-term maintenance, due to the inward desire for goal attainment (Strelan et al., 2003). This is particularly true in the realm of exercise, where greater adherence and behavioral maintenance are associated with intrinsic motivations (Strelan et al., 2003). In addition, intrinsic goals have been found to positively predict levels of self-determined motivation, as well as influencing positive indirect effects on leisure-time exercise and QoL. Opposing results are found with extrinsic goals, with significant negative indirect effects and lower self-determination in motivation predicting lower leisure-time exercise and QoL (Gillison, Standage & Skevington, 2006). Making the transition from "should" to "want to" motivations for physical activity and exercise are thus essential to long-term behavior change. A study addressing the relationship between exercise motives and psychological well-being of undergraduate men and women found that those who exercised in excess of 6 months demonstrated more intrinsic motivations for exercise than those individuals who exercised less than 6 months. Additionally, these more "long-term" exercisers demonstrated better overall psychological well-being in comparison with those who exercised for less than 6 months, with increased ability to manage stress and enjoy exercise (Maltby & Day, 2001).

Goals are not necessarily always pleasant or fun to attain. Rather, many require a commitment despite periods of un-enjoyment. For instance, the goal of "marathon runner" as described above, involves a commitment to running – commitment to run when the weather is unpleasant and despite bodily aches and pains. The goal to lose

weight also involves a commitment to abstain from eating certain foods and becoming more deeply involved with physical activity and can also be viewed as un-gratifying and unpleasant at the time. However, one might be willing to continue pursuing such goals if one feels that they have ownership over it and an intrinsic desire to achieve or avoid it (Sheldon & Elliot, 1999).

Scheduling & Exercise Barrier Self-Efficacy / Self-Regulation

Much research has focused on determining the relationship between self-efficacy and exercise behavior. Studies indicate that those with higher levels of exercise self-efficacy are more likely to adhere to exercise programs and maintain exercise behavior (Hooker & Kaus, 1994; Rodger & Sullivan, 2001; Whaley, 2003; Sullivan & Rothman, 2008). In a study on health-related possible selves in young and middle adulthood, Hooker and Kaus (1994) found that perceived self-efficacy was a key indicator of the generation of health-related possible selves. Self-efficacy, as defined by Bandura (1986), broadly refers to the confidence that an individual has in his/her ability to successfully engage in behaviors that will yield a desired outcome. However, self-efficacy can be thought of in more specific terms, depending on the behavior type discussed. For the purpose of exercise, self-efficacy relating to scheduling and overcoming barriers are particularly relevant. In order to proceed through new or difficult situations, or when difficult self-regulatory skills are necessary (such as with exercise behaviors), the belief

and confidence that one can actually act on the behavior is essential to initiate the behavior (Sniehotta, Scholz & Schwarzer, 2005).

Scheduling self-efficacy is distinguished from exercise self-efficacy as it impacts the *frequency* of exercise rather than its actual performance (Rodgers & Sullivan, 2001). In fact, research indicates that scheduling-related factors may be the primary obstacles towards regular exercise maintenance (Rodgers & Sullivan, 2001), indicating that increasing efficacy in this arena may positively impact adherence to exercise regimes. For college students, in particular, scheduling exercise may seem particularly trying, with busy schedules and little free time, especially around mid-term and finals. However, increasing self-efficacy in this realm is important (along with other motivational factors) in maintaining exercise goal pursuits over the long-term (Sullivan & Rothman, 2008).

Overcoming barriers to exercise is another key ingredient towards actualizing exercise behaviors. Self-efficacy in ones' ability to not only overcome scheduling barriers due to tight time constraints, but also efficacy in overcoming other barriers to exercise is therefore of high importance. Perceived barriers are consistently found to be the largest factor influencing weekly total exercise levels (Grubbs & Carter, 2002; Ali, 1996). Unsurprisingly, in college populations regular exercisers perceive fewer barriers to exercise than non-exercising counterparts and perceive significantly more benefits, helping to motivate and overcome perceived barriers (Grubbs & Carter, 2002).

One study examining the impact of a possible selves intervention on self-regulatory efficacy and exercise behavior found that those in the possible selves intervention had greater barrier self-efficacy than those in the control condition (Murru &

Ginis, 2010). Visualizing oneself as healthier and more fit may help overcome barriers in order to attain the hoped-for self, while generating and imagining feared selves may provide the motivation to reassess the ability to overcome avoid these feared selves. However, it could be true for the college-population that they have not had sufficient time and experiences with barriers to fully understand their levels of self-efficacy to overcome these barriers. An incomplete understanding of available resources thus may make overcoming barriers seem particularly trying for the college-aged student.

One major barrier to exercise is motivational strength to exercise. Over time, the motivational strength for maintaining a behavior can change. For instance, the resolve to exercise five times a week may diminish over time. However, while motivations to exercise may decrease, the presence of self-regulatory strength and strong self-efficacy, in such areas as barriers and scheduling, can help to maintain actual exercise behavior (Baumeister & Vohs, 2007). The active control that self-regulation provides to maintain behaviors becomes highly necessary in the midst of various situational obstacles, warding off a return to sedentary or less-active behaviors (Sniehotta, et al., 2005).

The goal of this study is to describe the role of possible selves of college females in terms of their importance, capabilities in achievement/avoidance of hoped for/feared selves, and their outcome expectancies. Additionally, this study seeks to examine how much college female's exercise is related to strategies for pursuit of their possible selves and other motivational factors of exercise planning efficacy and barrier efficacy. According to developmentalists, interventions aimed at life stages and transitional periods may be the most effective times to intervene and promote preventive health

behaviors (Evenson, et al., 2002). Understanding the motivational factors behind physical activity and exercise to attain positive health outcomes, or avoid negative health outcomes is ultimately necessary in order to effectively promote change in the health behavior of the individual.

An obvious disconnect thus exists between individual understanding regarding the positive and negative consequences of physical activities and actual exercise behaviors. Greater understanding of the links between individual's cognitions, motivations, and goals related to physical activity therefore continues to be important and highlights a significant area of needed research to bring about positive change in physical activity behaviors. Effective use of theory can help shape and inform interventions aimed at increasing physical activity adherence as individual attitudes and beliefs about physical activity and its consequences has a direct influence on how and to what extent one engages in the behavior (Scott, Eves, Hoppe, & French, 2009).

CHAPTER 3: METHOD

Subjects

The data on which this study was based was collected from 93 female, undergraduate students studying at the University of Texas at Austin. Participants for the study were recruited by an online University announcement service, sent to students' university email accounts. Recruited students followed a link posted in the announcement to a secure online survey (utilizing Qualtrics software). Students were also recruited by the primary investigators conducting in-person recruitment in undergraduate classrooms. During a brief (3-5 minute) presentation, students were informed of the purpose of the study, its requirements and potential benefits. Participants were informed that participation was strictly voluntary, and informed of the survey's website link if there was interest in participating. Participants were able to fully complete the survey online, with no in-person appointments necessary. After completing an online consent form, participants proceeded to the rest of the survey, which took approximately 20-30 minutes to complete.

Before recruiting students from the larger student body, pilot study participants were recruited from a large, undergraduate Health Education course. Two female undergraduate students consented to pilot test the survey. Upon student's completion of the survey, no problems were found with the survey instrument; therefore no changes were made to the original online questionnaire. Pilot test subjects were instructed not to

fill out the demographics section of the online survey; thus, no additional information (other than being female undergraduate students at the University of Texas at Austin) is known about these participants.

Materials and Procedures:

Participants completed the online survey on their own time, utilizing personal computers. While completing the survey was anticipated to take approximately 20-30 minutes, participants could complete the survey at their own pace and timing was not monitored. Questions included a range of response types, from short-answer to Likert-scale selections. After completing the survey, participants were asked to answer several demographic questions regarding age, weight, height, academic major and minor, ethnic group, current college year, current relationship status, residence, hours worked per week, and sport participation (and if they answered yes to sport participation, what sport and whether the sport was varsity level or not). Participants who completed the entire survey had the option of entered into a drawing for one of six small monetary prizes. To enter the drawing, participants sent an email to the primary investigators with their name and UT EID.

Instruments:

1. Possible Selves Instrument – Exercise-related

Cross and Markus (1991) first developed the Possible Selves Instrument to serve as a tool to differentiate and assess hoped-for and feared selves. Largely open-ended in format, the instrument includes rating how *capable* responders felt in accomplishing their hoped-for selves (or preventing feared selves) and how *likely* responders felt that these possible selves were in coming about (Cross & Markus, 1991). Adequate test-retest reliability of possible selves generated in response to open-ended questions has been found in previous research to be adequate (Oyserman & Markus, 1990).

To more succinctly ascertain undergraduate females' hoped-for and feared possible selves *as they relate to exercise*, we utilized a slightly amended version (Whaley, 2003). In this version, Cross and Markus's physical category (which included possible selves related to weight, health and activity level) was divided into three separate categories: body image (those possible selves relating to weight and attractiveness), physical (possible selves relating to activity levels), and health (possible selves relating to medical issues and concerns) (Whaley, 2003). Cross and Markus's lifestyle category was renamed (but consistent with) the independence/dependence category, and encompassed those possible selves relating to being dependent upon outside care. Other modifications by Whaley to Cross and Markus's instrument were kept, including the addition of a retirement category, combining the education and occupation category, as well as the family and relationships category and combining the leisure and material categories into a 'personal projects' category (Whaley, 2003). Due to the tendency of our study population

to create personal projects that were highly associated with physical activity levels, we collapsed the physical and personal projects categories. Nine final categories are thus used in coding: health, physical, body image, personal and spiritual, occupation and education, dependence/independence, family and relationships, retirement and financial.

Participants separately completed measures regarding hoped-for and then feared possible selves. The first page includes a definition of hoped-for possible selves, providing several examples of what these could entail as well as providing examples of what does *not* qualify as a possible self. Participants were then instructed to write down all of the hoped-for possible selves currently important to them, *as related to participation in physical activity*. Following the listing of all hoped-for selves, participants were prompted to list the one hoped-for self that they considered the most important in regard to physical activity participation and to briefly explain why. Finally, participants responded to three questions to assess the self-regulatory processes associated with the self, specifically the importance, perceived self-efficacy (capability) and outcome expectancy associated with that possible self. Questions were rated on a 7-point Likert scale, ranging from 1 (*not at all capable/likely*) to 7 (*very capable/likely*). One modification made for this study was the addition of determining participants' current behavior towards/away from future possible selves, as done by Oyserman, Bybee, Terry and Hart-Johnson (2004). Participants were prompted to answer whether they currently take steps towards reaching their most important hoped-for possible self. If participants answered positively, they were prompted to list up to five specific things that they are doing (Oyserman et al., 2004). Following completion of questions regarding

hoped-for possible selves, participants were asked the same questions regarding feared possible selves.

Using a population different from that of Whaley (2003) will help to determine whether a possible selves-related instrument is effective in other populations. However, other studies with slight modifications to the original Possible Selves Inventory (particularly with the addition of a categorical variable of *health salience*), have found the instrument effective in samples of both older adults and college students (Hooker, 1992).

2. Current Physical Activity Levels

Current physical activity level was assessed by the Godin-Shephard Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985; Godin, 2011), which has been used successfully across a multitude of diverse populations (Segar, Jayaratne, Hanion & Richardson, 2002). The measure assesses the amount of light, moderate, and vigorous intensity activity that individuals engage in, using a 1-week recall. Each of the three questions asks participants to estimate how many times in the previous week (7 days) that they engage in exercise *at each intensity level* for more than 15 minutes. For the present study, weighted scores across vigorous and moderate activity were used (9 for vigorous and 5 for moderate) summing the products of the separate components. Higher scores therefore indicate greater levels of physical activity. Reliability scores for the GLTQ range from .62 to .74 for adults (Godin & Shephard, 1985; Jacobs, Ainsworth, Hartman & Leon, 1993) and were found to be .81 in a study utilizing adolescent children (ranging from 5^{th} to 11^{th} grade) (Sallis, Buono, Roby, Micale & Nelson, 1993). Previous research

demonstrates that this scale is easy to understand, responsive to changing exercise behavior, and anticipates relationships with scores derived from physical activity monitors and maximal fitness tests (Wilson, Rodgers, Fraser, & Murray, 2004).

3. Scheduling Self-Efficacy Scale

Scheduling self-efficacy was assessed with five items developed by Rodgers and Sullivan (2001). The five items are scored on a 100% confidence scale ranging from 0% (no confidence) to 100% (completely confident). Each item follows the stem, "How confident are you that you can…", and include such questions as "exercise three times per week for the next 3 months?", and "make up times you missed?". The Scheduling Self-Efficacy scale has proven effective in several previous studies, with Cronbach's α level's ranging from .80 to .88 (Rodgers & Sullivan, 2001; Rodgers, Hall, Blanchard, McAuley, & Munroe, 2002). In order to obtain each participants' Scheduling self-efficacy score, participants values for each response are added together and subsequently divided by the total number of scale items.

4. Barrier Self-Efficacy Scale

To measure participant barrier self-efficacy, we used the 14-item Self-efficacy scale developed by Garcia and King (1991). Similar to the scale for Scheduling Self-efficacy, participants are asked to rate how confident they are (on a scale of 0% to 100%) that they would exercise given a variety of situations that potentially make exercise difficult, such as "when tired", "when on vacation", and "during bad weather" (Garcia &

King, 1991). Internal consistency for this measure has been found to be high, with a Cronbach's α of 0.90. (Garcia & King, 1991). Scoring is also similar to that of the Scheduling Self-efficacy scale, with scores added together and then divided by the total number of items.

Data Analysis:

Results from the study were analyzed utilizing IBM SPSS statistical software (version 18). Descriptive statistics, including means, standard deviations, and frequencies were computed to summarize demographic characteristics of the sample, as well as the motivational and behavioral variables of interest in the study. Multiple logistic regression analysis was used to determine the association of possible selves-related motivational variables and self-efficacy to leisure-time physical activity. Because six participants were over the age of 30, age was controlled for in logistic regression analysis.

CHAPTER 4: RESULTS

Study Population Characteristics

Ninety-four students completed the online survey. Because one participant was male, his data were excluded from analyses. All results pertain to the remaining 93 female participants. The participants ranged in age from 18 to 48, with a mean age of 21.7 years (SD = 4.9). The majority of students (*n* = 58, 62.4%) were between the ages of 19 and 21, were single (*n* = 68, 73.1%), and lived either off-campus (*n*= 62, 66.7%) or in Residence Halls (*n*= 24, 25.8%). Approximately half (*n* = 41, 44.1%) of participants did not work at all, and 39.8% (*n*= 37) worked part-time or less (19 hours/week or less). Few participants worked 40 hours or more (*n* = 5, 5.4%). Most participants were non-Hispanic white (*n* =56, 60.2%), with other more highly represented ethnicities including Hispanic (*n* =16, 17.2%), Asian or Pacific Islander (*n* =9, 9.7%), and non-Hispanic black (*n* = 6, 6.3%). This ethnic distribution is fairly consistent with that of the University of Texas at Austin, at large. Statistics reporting the entering Fall 2011 undergraduate students at the University of Texas at Austin, found 48% to be non-Hispanic Whites, 21% Hispanic, 18% Asian, and 5% non-Hispanic Black (The University of Texas at Austin Office of Admissions, 2011).

Current year of undergraduate study was fairly evenly distributed among the first four years (See Table 1), with a slight majority of fourth year students (*n*= 24, 25.8%). Study participants tended not to be sports participants, with only 18.3% (*n*= 17) reporting current involvement. Of these sport participants, only 23.5% (*n* = 4, SD = .44) were involved at the varsity level. Calculations of body mass index (BMI) were also obtained

from participants based upon self-reported height and weight, with a mean score of 22.9 (SD = 3.37). See Table 1 for a complete listings of all study sample characteristics.

Table 1: Sample Characteristics: M (SD, N) and Range for Continuous Variables and N (%) for Categorical Variables (Total N = 93).

Age: 21.66 (4.99; 93) Range 18-48	
BMI: 22.9 (3.37; 93) Range 19-33.1	
Ethnicity:	
White, non-Hispanic	56 (60.2)
Hispanic	16 (17.2)
Asian or Pacific Islander	9 (9.7)
Black, non-Hispanic	6 (6.5)
American Indian or Alaskan Native	1 (1.1)
Other	3 (3.2)
Missing	4 (4.3)
Current Year (Undergraduate):	
1st Year	21 (22.6)
2nd Year	16 (17.2)
3rd Year	22 (23.7)
4th Year	24 (25.8)
5th or more Year	8 (8.6)
Missing	4 (4.3)
Relationship Status:	
Single	68 (73.1)
Married/Partnered	17 (18.3)
Engaged	3 (3.2)
Separated/Divorced/Widowed	2 (2.2)
Missing	5 (5.4)
Residence:	
Residence Hall	24 (25.8)
Sorority	1 (1.1)
Off-Campus	62 (66.7)
With Parents	3 (3.2)
Other	1 (1.1)
Missing	4 (4.3)
Hours Worked/Week:	
0 Hours	41 (44.1)
1-9 Hours	12 (12.9)
10-19 Hours	25 (26.9)
20-29 Hours	7 (7.5)
30-39 Hours	1 (1.1)
40+ Hours	5 (5.4)
Missing	4 (4.3)
Currently Engaged in a Sport?:	
Yes	16 (17.2)
No	75 (80.6)
If yes, is it a Varsity level sport?:	
Yes	4 (4.3)
No	12 (12.9)

A variety of academic majors were represented in the study (See Table 2). Eight different college/schools and 44 different majors were represented, indicating the presence of diversity among the sample population. However, a disproportionate number of participants were from health-related fields (Health Education/Promotion, Kinesiology, Exercise Science, Nutrition, Nursing and Public Health), totaling 45.2% (*n* = 42).

Table 2: Academic Majors

Major	**N (%)**
Business: (Accounting, Advertising, Management Information Science)	6 (6.5)
Communication: (Communications, Public Relations, Radio-TV-Film)	5 (5.4)
Science: (Engineering, Computer Science, Biochemistry, Biology, Geology, Public Health)	14 (15.1)
Liberal Arts: (Anthropology, English, Geography, Government, History, International Relations, Linguistics, Philosophy, Plan II Honors, Psychology, Sociology)	13 (14.0)
Education: (Educational Administration, Elementary Education, Math UTeach)	4 (4.3)
Health: (Exercise Science, Health Education, Health Promotion, Kinesiology)	34 (36.6)
Human Ecology: (Human Development, Nutrition, Textile & Apparel)	8 (8.6)
Nursing	2 (2.2)
Undeclared	2 (2.2)

Categories of Most Important Possible Selves

The types of most important possible selves identified by participants differed whether these possible selves were hoped-for or feared. The most frequently reported hoped-for possible selves were in the Physical category (*n* = 36, 38.7%), but also in the Health (*n* = 19, 20.4%), Personal and Spiritual (*n* =13, 14.0%), Occupation and Education (*n* = 11, 11.8%) and Body Image (*n* = 10, 10.8%) categories. Other categories had few or no responses for most important hoped-for possible selves (see Table 3).

Most important feared selves were most frequently cited within the Body Image category (*n* = 39, 41.9%), with citations within the category of Health, closely following (*n* = 27, 29.0%). Personal and Spiritual (*n* = 11, 11.8%) feared possible selves were also more frequently cited. The remaining possible selves categories received few, if any, citations for most important feared possible selves (see Table 4).

Table 3: Categories and Frequencies of Most Important Hoped-for Possible Selves (Total N = 93).

Category	Representative Responses	# of Most Important Selves in this Category (%)
Health	"I want to be healthy." "Longevity." "To remain healthy without injuries."	19 (20.7)
Body Image	"To wear a size 6." "I want to be attractive." "To have a nice body."	10 (10.8)
Personal & Spiritual	"To be mentally strong." "Happiness." "Serving God's purpose for my life."	13 (14.0)
Occupation & Education	"To be in the medical field." "To be successful." "To be a graduate student."	11 (11.8)
Dependence / Independence	"Able-bodied even in old age." "To be able to play with my grandkids when I am older."	0 (0)
Family & Relationships	"To become a mother." "Becoming a wife." "To be loved by many."	5 (5.4)
Financial	"To be wealthy." "Save money by not eating as much."	0 (0)
Physical	"Run everyday." "Exercise on a daily basis." "To have endurance."	36 (38.7)

Table 4: Categories and Frequencies of Most Important Feared Possible Selves (Total N = 93).

Category	Representative Responses	# of Most Important Selves in this Category (%)
Health	"To be disabled." "Getting diabetes." "Loss of physical strength."	27 (29.0)
Body Image	"Not being able to fit into the same clothes I've had for years." "Becoming fat." "Getting wrinkly."	39 (41.9)
Personal & Spiritual	"Losing motivation." "Becoming boring (one-track mind)." "Being uncomfortable in my own skin."	11 (11.8)
Occupation & Education	"Not being able to find a job." "Never becoming a graduate student." "Failing classes."	3 (3.2)
Dependence / Independence	"Helpless" "Not being able to take care of myself due to old age." "Can't move."	3 (3.2)
Family & Relationships	"Not getting married and raising a family." "Disconnected from family and friends." "Divorced."	3 (3.2)
Financial	"Becoming dependent on others financially." "To not be able to get good medical insurance." "Not achieving my goal of financial stability."	2 (2.2)
Physical	"Being out of shape." "To lose all my endurance." "Underperformance."	6 (6.5)

Motivational and Exercise Variables

Table 5 displays the descriptive data for all continuous motivational study variables and exercise, including means, standard deviation and range. Hoped-for and feared self importance, self-efficacy, and outcome expectancy, the number of steps currently being taken to achieve or avoid hoped-for or feared possible selves, as well as scheduling self-efficacy and barrier self-efficacy were used for analyses to determine their association with participant exercise behavior.

Overall, participants stated that they are currently taking steps to achieve their most important hoped-for self (*n* = 86, 92.3%) as well as currently taking steps to avoid their most important feared self (*n* = 83, 89.2%). The mean number of steps taken to achieve the hoped-for self was 2.9 (SD = 1.552), and the mean number of steps to avoid the feared self was 2.68 (SD = 1.621). Participants expressed high levels of importance with regard to both their most hoped-for and feared possible selves, with a mean of 6.36 (SD = 0.76) and 6.66 (SD = 0.77), respectively. Participants also felt capable in achieving or avoiding these possible selves (M = 5.97, SD = 1.072; M = 6.05, SD = 1.111) and that achievement or avoidance of possible selves was highly likely (M = 5.73, SD = 1.128; M = 6.05, SD = 1.061).

Participants, ranked highly on both the scheduling self-efficacy (M = 8.55, SD = 2.241) and barrier self-efficacy scales (M = 7.89, SD = 2.106), being overall highly confident in ability to overcome scheduling and other barriers to exercise. Participants responded to self-efficacy questions on an 11 point scale, from 0 to 100% confidence. Therefore, on average, participants were over 70% (75.5%) confident in overcoming scheduling hurdles to exercise and were nearly 70% (68.9%) confident in ability to overcome other barriers to exercise.

Table 5: Descriptive Statistics for Study Variables (Total N = 93).

Variable	Mean	SD	n	Range
Importance to achieve possible self?	6.36	0.76	93	4 to 7
Importance to avoid possible self?	6.66	0.77	93	2 to 7
Capability in achieving possible self?	5.97	1.072	93	2 to 7
Capability in avoiding possible self?	6.05	1.111	93	1 to 7
Likely to achieve this possible self?	5.73	1.128	93	1 to 7
Likely to avoid this possible self?	6.05	1.061	93	1 to 7
Number of steps currently taken to achieve most important possible self	2.9	1.552	93	0 to 5
Number of steps currently taken to avoid most important possible self	2.68	1.621	93	0 to 5
Scheduling Self-efficacy	8.55	2.241	93	2 to 11
Barrier Self-efficacy	7.89	2.106	93	1 to 11

Associations Between Motivational Variables and Leisure-Time Physical Activity

For purposes of analysis, only the numbers for vigorous and moderate exercise bouts were used to calculate current physical activity patterns according to the GLTQ. Questions pertaining to mild bouts of physical activity were used to assure that these activities were not mistakenly grouped with moderate physical activity (Godin, 2011). According to Godin, individuals completing 24 METs or more of exercise each week are considered active and receive substantial benefits (Godin, 2011). Using 24 MET units to differentiate between subjects, a binary variable (MeetsRec; 0 = did not meet criteria of 24 units or more; 1 = did meet criteria) was created to analyze the association of the

motivational variables with participant exercise behavior. Of the participants, 12 were in the lower category and 79 were in the upper category for level of physical activity.

Separate multiple logistic regression analyses were then conducted to determine the association of each motivational variable with the binary exercise variable, controlling for age (See Table 6). Results of these tests yielded significant results for several motivational factors related to exercise. Both the number of current steps taken to achieve the most important hoped-for self and the number of current steps taken to avoid the most important feared self were significantly related to physical activity level, as was scheduling self-efficacy and barrier self-efficacy. Each step taken to achieve the most important possible self was linked to an 88% increase in the odds of being in the upper category for physical activity, and each step taken to avoid the most important feared self was linked to a 58% increase in the odds of being in the upper category for physical activity. Each 10% increase in scheduling self-efficacy was linked to a 58% increase in the odds of being in the upper category for physical activity, and each 10% increase in barrier self-efficacy was linked to a 62% increase in the odds of being in the upper category for physical activity.

Table 6: Logistic Regression Analyses of Associations Between Motivational Variables and Leisure-Time Physical Activity (Total N = 91).

Variable	***OR***	***95% CI***	***p***
Importance to achieve possible self?	1.226	.533, 2.822	.632
Importance to avoid possible self?	1.224	.635, 2.359	.546
Capability in achieving possible self?	1.338	.803, 2.229	.263
Capability in avoiding possible self?	1.096	.635, 1.892	.743
Likely to achieve this possible self?	1.078	.631, 1.841	.784
Likely to avoid this possible self?	.946	.509, 1.755	.859
Number of steps currently taken to achieve most important possible self	1.881	1.211, 2.921	**0.005***
Number of steps currently taken to avoid most important possible self	1.577	1.035, 2.403	**0.034***
Scheduling Self-efficacy	1.575	1.182, 2.098	**0.002***
Barrier Self-efficacy	1.615	1.174, 2.221	**0.003***

***** signifies significant p-value

Notes: CI = Confidence interval; OR = Odds ratio; All analyses control for age

Active = 1, defined as >= 24 unites on the Godin-Shephard Leisure-Time Physical Activity Questionnaire

Moderately or insufficiently active = 0, defined as <= 23 units (reference category)

79 participants met the active criteria; 12 were moderately or insufficiently active

CHAPTER 5: DISCUSSION

The purpose of this study was to examine the construct of possible selves identified by college women, to ascertain level of importance, perceived capabilities and outcome expectancies of these identified possible selves, as related to exercise, as well as the extent of efforts to attain or avoid them. Of particular interest was whether the number of possible self-related self-regulatory strategies, scheduling and barrier self-efficacy would be associated with exercise behavior.

A sampling of current students yielded 93 female undergraduates from the University of Texas at Austin. Participants responded to an online survey sent by the Universities online announcement service, sent to students' university email accounts. Participants were also recruited through in-class recruitment by the principle investigators. Most students were between the ages of 18 and 22; however, six students were over the age of 30, and two were over 40. While study participants were primarily non-Hispanic White (58% of participants), the ethnic breakdown was fairly consistent with that of the University of Texas at Austin, at large. Statistics reporting the entering Fall 2011 undergraduate students at the University of Texas at Austin, found 48% to be non-Hispanic White, 21% Hispanic, 18% Asian, and 5% non-Hispanic Black (The University of Texas at Austin Office of Admissions, 2011). Eight different colleges / schools and 44 academic majors were represented, indicating diversity within the study population.

Possible Selves Categorization

Responses for both most important hoped-for and feared selves ranged among eight of the nine established possible selves categories. Most important hoped-for selves

differed in categorization from those identified as the most important feared selves, with more variability in categorization. Most important hoped-for selves more frequently appeared within the Physical category than any other hoped-for possible self category, accounting for almost 40% of participants. Typical responses included "becoming an elite marathon runner", "working out every day", or other such goal-oriented physical challenges. The categories of Health, Personal and Spiritual, Occupation and Education, and Body Image encapsulated the other frequently referenced most important hoped-for possible selves.

Interestingly, while body image concerns encompassed the majority of most important feared possible selves, body image did not hold as much power over the most important hoped-for selves. One possible reason for this could be due to a pervading cultural norm that equates thinness to health (Segar et al, 2007); thus, if participants hold to this norm, responses of "be healthy" may actually have had undertones of body image concerns. With college-aged individuals typically at their physical prime, physical goals may feel the most achievable, therefore influencing these goals importance in an individuals' life. The number of most important physical hoped-for selves may also have been heavily influenced by the University of Texas at Austin's location. The university's placement in a city where biking is highly encouraged, and where road-races, triathalons, and other competitive ventures are frequent occurrences may significantly have influenced the types of hoped-for possible selves created by participants.

Regarding most important feared possible selves, only three of the nine categories were frequently cited by study participants. Over 40% of these responses were related to body image. Weight and appearance concerns were prevalent throughout the qualitative report, unsurprising given the life stage of the majority of study participants. As discussed in the literature review, the undergraduate years are ridden with many social

pressures from friends, family, media, and the culture to conform to a particular image and achieve an "ideal" body (McLean, Paxton & Wertheim, 2010). College is also a time that many seek marriage or life partners, creating additional pressures to look a particular way to attract potential mates.

Feared selves relating to Health (such as becoming a diabetic, developing a chronic disease, or having a debilitating injury), were also frequently cited within the sample. This is also unsurprising, particularly given the proportion of students in health-related fields. These students are therefore more likely to understand the negative ramifications of physical inactivity on personal health and thus influence likelihood towards identifying feared selves in this category.

While not as frequently cited as the two previous possible feared self categories, most important feared selves were also more frequently identified within the Personal and Spiritual category with fears of "not serving God's purpose" and "having high stress levels". Approximately 6% of respondents cited Physical feared selves as their most important (such as "getting out of shape"), and few cited either the Occupation and Education, Dependence/Independence, or Family and Relationships category as their most important feared selves. The Financial category was the least frequently cited for most important feared selves, and again, no most important selves in the Retirement category emerged.

As few responses emerged for the Retirement category, it can be assumed that possible selves related to old age were not particularly influential for participants' exercise behavior. With the average age of participants nearly 22, most will not enter the retirement phase of life for approximately 40 or more years, roughly twice their current lifespan. Thus, hoped-for and feared most important selves in this category may not be

particularly salient at present; however, as participants age the salience of retirement possible selves may change.

Motivational and Exercise Variables

Several significant relationships were found between motivational correlates of exercise and recommended level of physical activity, controlling for age. Current number of steps to achieve/avoid hoped-for or fear selves, as well as scheduling and barrier self-efficacy showed significant results. Participants reported taking an average of 3 steps to achieve hoped-for possible selves, as well as to avoid feared possible selves. Each additional step identified (up to five) to achieve the most important hoped-for self was linked to an 88% increase in odds of meeting the recommendations for physical activity. Each additional step identified to avoid their most important feared possible self was linked to a 58% increase in odds of meeting the recommendations for physical activity.

Overall, roughly the same number of participants indicated currently taking steps to achieve or avoid their most hoped-for or feared possible selves. However, a slightly greater number of current steps were listed for hoped-for possible self attainment than for feared possible self avoidance. Feared selves may seem more distant to participants than their hoped-for selves, thus prioritization for current actions may be towards hoped-for possible selves. Interestingly, while more steps are taken towards hoped-for selves, the feared self was viewed as more important to avoid than achieving the hoped-for self. Participants also felt slightly more capable to avoid their feared self and deemed it more likely to prevent the feared self than the hoped-for self. The consequences of becoming the feared self may be particularly sobering (such as becoming overweight or becoming diabetic) and thus the importance of these selves may be ranked especially high.

Scheduling and barrier self-efficacy also significantly differentiated between those meeting exercise recommendations and those not. Every 10% increase in confidence to overcome scheduling issues related to exercise was linked to a 58% increase in odds of meeting the recommendations for exercise. Regarding the ability to overcome barriers to exercise, every 10% increase in confidence was linked to a 62% increase in odds of meeting the recommendation for exercise. These suggest that, the more steps an individual conceptualizes and takes towards (or away from) achieving (or avoiding) their most important hoped-for (or feared) possible self, then the more likely they will be to engage in exercise. Furthermore, the greater the degree of scheduling self-efficacy and barrier self-efficacy, the more likely an individual will be to perform exercise. These results are consistent with findings from Whaley (2003), Garcia and King (1991), and Murru and Ginis (2010) that link greater levels of efficacy to greater exercise adherence. Study participants, overall, were highly confident in their ability to overcome both scheduling and barrier obstacles to exercise. On average, participants were over 70% confident in overcoming scheduling hurdles to exercise and were nearly 70% confident in ability to overcome other barriers to exercise. It can therefore be assumed that study participants regard physical activity as highly important, and thus make exercise a priority in their lives – further confirmed by the vast number of participants meeting the recommended levels of weekly physical activity.

Limitations:

The ability to find significant results from the study may have been hampered with only 93 participants comprising the study sample. Furthermore, the sample was biased towards greater activity levels, with only approximately 13% falling below the

recommended weekly level of exercise to obtain substantial benefit, as outlined by Godin (2011).

As the study was limited to undergraduate females, the results may not be generalizeable to older female populations. The undergraduate college experience is unique in many ways that do not continue into later life. While students have many new responsibilities thrust upon them when entering college, there are still many responsibilities and roles that do not fully emerge until after graduation. Therefore, possible selves (particularly feared) may not seem as difficult to avoid and hoped-for possible selves may seem easier to achieve, with limited outside responsibilities distracting for their avoidance or attainment. Additionally, the study population was a convenience sample, exclusive to undergraduate students currently enrolled at the University of Texas at Austin. Differences may exist between undergraduate females in different parts of the country, or at public versus private institutions. Furthermore, in-class recruitment took place in two Health Education department classes, potentially biasing the study towards a more health-conscious population more aware and understanding of the impact of current exercise behaviors on their individual future health and wellness.

Another limitation of the study was the reliance on self-reported data. Participants may not have been entirely truthful in their survey answers; however, the survey was anonymous, with no readily identifying markers on the answers, and the participants were able to complete the survey in a private location. Finally, the study was cross-sectional in design, and causality cannot be inferred.

Future Research:

Extending this research to female populations post-graduation could be of great interest and represent another population not greatly studied with regard to this topic. With numerous new potential responsibilities undertaken in the first 10 years post-college graduation (for example, full-time employment, moving to a new city, marriage, children, etc), it would be of interest whether the possible selves identified by women in young adulthood change, or if they stay constant with those identified by undergraduate women.

Of additional interest would be to extend the target population to include not only female undergraduates, but also females of the same age *not currently attending a four-year undergraduate institution*. Are the hoped-for and feared possible selves similar to those of their college-enrolled peers and do they feel equally equipped in attaining or avoiding those selves? Do they have similar results with other motivational correlates to exercise as their college-enrolled peers?

Expanding upon this exploratory analysis on the role of possible selves and other motivational correlates upon exercise behaviors in college women would help further the currently sparse body of literature on the subject. Ideally, deeper analysis and study on the underlying motivations and factors influencing unique sub-populations of women may help to create and tailor physical activity and exercise interventions for these groups and help stem the tide on growing levels of inactivity and obesity across the life-span.

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